

Updates to the Grand River Source Protection Plan

Public Consultation Presentation Transcript

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Welcome to the Virtual Public Open House for the proposed update of the Grand River Source Protection Plan. The public consultation period is open from January 25, 2021 up to and including March 8, 2021.

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The Grand River Source Protection Plan is being updated to include new information that impacts the Region of Waterloo. The Source Protection Plan, or Plan, was originally approved in 2015 and the Plan policies took effect on July 1, 2016. An updated Plan took affect October 1, 2021. Since that time, technical studies have been completed in the Region of Waterloo that have resulted in changes to source protection information:

1. the shape and size of water quality Wellhead Protection Areas, or WHPAs, for the Mannheim Aquifer Storage and Recovery system, also called the ASR system, and Cambridge East well fields, specifically Pinebush and Clemens Mill systems, have changed;
2. a new water quantity WHPA has been added in the Township of Woolwich.

As a result of the changing water quality WHPAs and the addition of the new water quantity WHPA, a number of properties are now located in a WHPA while others are no longer.

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This presentation will provide an overview of:

- updated and new WHPA maps
- information on what activities and drinking water threats may exist within the WHPAs
- new water quantity policies; and
- information on the plan update process and how members of the public can comment on the updated plan

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The Grand River Plan was developed through the Source Protection Program under the Clean Water Act. The Act was established in 2006 in response to the 2000 Walkerton E. coli outbreak that resulted in the contamination of the town's drinking water supply. Over 2000 people became ill, and seven people died from their illness.

The goal of the program is to protect current and future municipal drinking water sources from contamination (water quality) and depletion (water quantity) by developing science-based, locally-developed source protection plans for each watershed.

Source Protection is the first barrier in a multi-barrier approach to protect municipal drinking water.

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The Region of Waterloo drinking water systems are included in the Grand River Source Protection Plan. Waterloo Region operates an integrated urban system that provides water to Cambridge, Kitchener, Waterloo, Elmira, St. Jacobs and New Hamburg. It consists of approximately 80 wells and a surface water intake on the Grand River.

The Region also operates 13 smaller systems that provide municipal drinking water to portions of communities in North Dumfries, Wellesley, Wilmot, and Woolwich.

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Over the last couple of years, several new water supply wells have been constructed and are in the process of being connected into the supply system. These wells are located in the west side of Kitchener and the east side of Cambridge.

The wells in Kitchener are part of the ASR system, which is situated at the Region's existing Mannheim Water Treatment Plant site. This well field was expanded to include installation of two new recovery wells and the conversion of one recovery well to a dual function injection and recovery well.

The new wells in Cambridge were installed as part of a Municipal Class Environmental Assessment completed in 2018, the purpose of which was to optimize the amount of water going to three treatment plants located in east Cambridge. The preferred alternative from the Class EA is to increase the amount of water pumped from an existing well and the addition of a second well at the Pinebush treatment plant site as well as construction of a new supply well to feed into the Clemens Mill treatment plant. No changes were recommended to the supply to the third treatment plant.

As a result of these new wells and changing pumping rates, an update to the Grand River Source Protection Plan is being undertaken.

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What is a water quality Wellhead Protection Area, or WHPA? A WHPA is an area that surrounds a municipal well and helps protect it from contamination. A WHPA is called a “vulnerable area” under the Act. Technical studies are completed to determine the size and shape of the WHPA by measuring how quickly water moves horizontally and vertically towards the well. The WHPA is then divided into Zones based on how quickly the water moves, also called time-of-travel or capture zones. There are four Zones: a 100-metre circle zone, a 2-year time of travel zone, a 5-year time of travel zone and a 25-year time of travel zone. For example, if a contaminant entered the ground at the boundary between the two-year and five-year zone, it would take at least two years until it reached the well. Each of the time based well protection areas is then further subdivided into areas of low, medium and high vulnerability to contamination and scored which results in vulnerability scores range from two (low) to 10 (high).

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The new ASR wellhead protection areas are illustrated in this map, which also show a close-up picture of the areas in the current source protection plan and the changes being proposed. As can be seen on this diagram, there is very little change in the extent of the protection areas in this area, largely because the ASR wells are surrounded by protection areas from the adjacent Mannheim well systems. The location of the new wells can be seen as the addition of the two wells with red circles which represent the 100 m or WHPA- A well head protection area around the wells. As noted in the close-up pictures, the proposed protection area for the ASR wells does not extend as far to the west and extends further south. A small portion of the proposed protection area south of Bleams Road is identified as an area with a vulnerability score of 10 and is depicted in the map with red, where this area is currently orange representing a vulnerability score of 8. Most drinking water quality threats and activities prescribed in the regulations of the Clean Water Act are restricted to areas where the vulnerability equals 10.

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The new Cambridge East wellhead protection areas are illustrated in this slide, which presents a picture of the protection areas in both the current approved source protection plan and the proposed updated plan. A close-up of the areas immediately surrounding the wells are presented and discussed in the next slide. This map illustrates that there is only a small change in the updated protection areas, primarily along the southeast margin of the areas and within Wellington County. The vulnerability scoring of these protection areas generally varies from 2 to 6, which means that most prescribed drinking water threats and activities are not identified as significant threats and therefore source protection policies will not apply.

It is important to note that source protection policies in the Wellington chapter of the Grand River Source Protection Plan apply to the protection areas within Wellington County. While the policies were shared between each jurisdiction for the purposes of developing similar policies, some of the policies in the Wellington chapter vary somewhat from those in the Waterloo chapter due to differences in implementation approaches.

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The current and proposed wellhead protection areas shown in this close up of Cambridge East. The maps show the location of the new supply wells at Pinebush (identified as P19) and Clemens Mill (identified as G19) and the high vulnerability score of 10 assigned to the 100 m (WHPA-A) area around these wells. The new wells and changes in the pumping rates at both existing and new wells also result in a few other more minor changes in the size and shape of the wellhead protection areas and vulnerability scoring.

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The Clean Water Act lists 20 activities that are considered threats to municipal drinking water quality. These activities are divided into two categories: chemicals and pathogens. Within the boundary of a WHPA, an activity has the potential to become a significant threat to municipal drinking water sources, depending on the vulnerability score. Technical assessments are completed to determine whether the activity is a significant risk to contaminating the water supply. Policies in the plan only apply to activities determined to be significant which is defined in regulation.

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Here are some examples of activities that have the potential to be a significant drinking water threat. They include:

- handling, storing and applying commercial fertilizers or pesticides;
- storing and applying de-icing salt to roads, sidewalks and parking lots;
- storing, applying and managing agricultural source materials, for example, the application of manure on a farm field; and
- storing snow, for example, storing snow on a commercial parking lot

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As part of the Source Protection Program, the chemistry of raw groundwater in municipal wells is also studied for the presence of possible contaminants. If there is a high enough concentration or increasing trend of a contaminant in the well water that could negatively impact the quality of the drinking water, then a Water Quality Issue Contributing Area, also called an ICA, is established. Issue Contributing Areas have been developed for elevated nitrate or chloride concentrations, for example. An ICA is

an area where activities may contribute to the increased levels of the contaminant in the well. Any prescribed threat activity within the ICA that could be contributing to the contamination is identified as a significant drinking water threat and source protection plan policies will apply.

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This slide shows the existing and updated delineation of the Issue Contributing Area associated with two of the existing wells in the Pinebush well system. This Issue Contribution Area has been designated due to increased levels of chloride related to use of winter maintenance chemicals on roads and parking lots. While this Issue Contributing Area is not related to the new supply wells in Cambridge, the shape of it changes with the introduction of pumping from these new wells.

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Wellhead protection areas and Issue Contributing Areas that we've seen in the previous slides are the basis for establishing where activities need to be managed to protect drinking water sources. Significant threat activities inside a WHPA or ICA may be subject to source protection plan policies. The aim of these policies is to manage existing and future significant threat activities to protect the municipal water supply.

Plan policies may apply to significant threat activities identified in the updated Mannheim ASR and Cambridge East well field WHPAs and ICAs, as presented in the next three slides.

Contact the Region of Waterloo Risk Management Official to find out if plan policies may apply to activities taking place on your property. Contact details are at the end of this presentation.

You may also visit Lake Erie Source Protection Region's website at www.sourcewater.ca for the currently approved plan policies.

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This map shows where source protection plan policies may apply in the updated Mannheim ASR WHPAs. The legend on the right of the slide indicates where threat activities can be significant within the WHPAs, and where plan policies may apply. In areas coloured red, which are those areas with the highest vulnerability score of 10, all nineteen prescribed water quality threat activities can be significant and may be affected by policies, whereas in areas coloured orange (these have a vulnerability score of 8), only three activities can be significant and are affected by policies. In areas coloured yellow with a vulnerability score of 2, 4, or 6, only one threat activity can be significant and is affected by policies. For example, the storage and application of commercial fertilizer, number 8 and 9 in the legend, can only be a significant threat activity in areas

that are red. That means policies that address the storage or application of commercial fertilizer may only apply to properties in red areas.

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This map shows where source protection plan policies may apply in the Cambridge East WHPAs. As in the previous slide, the legend on the right indicates where threat activities can be significant within the WHPAs, and where plan policies may apply. Please note that the updated WHPAs extend into the Township of Puslinch in Wellington County. Source Protection Plan policies contained in the Wellington County chapter will apply to the properties in Puslinch.

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This map shows the updated Issue Contributing Area, or ICA, for Chloride for the Pinebush well system in Cambridge East. The legend on the right of the slide indicates the four threat activities that can may be significant within the ICA, which includes activities within the sewage systems category, the application, handling and storage of road salt, and the storage of snow. Plan policies may apply if one or more of those activities is or would be taking place on a property within the Chloride ICA. Please note that the ICA is extending into Wellington County. Policies contained in the Wellington County chapter of the Grand River Source Protection Plan apply to properties in Puslinch that are within the ICA.

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There are a number of tools, or types of policies, that we can used under the Clean Water Act to manage significant drinking water threats and minimize or eliminate the risks to drinking water sources.

These tools can include education and outreach policies that establish programs to educate the public about a particular threat activity, to more restrictive policies such as prohibition of a significant threat activity. Prohibition policies are used as a tool of last resort, meaning they are only used in circumstances when all other policy options are unable to adequately protect the municipal drinking water.

Lake Erie Source Protection Region and municipalities work together to develop and update policies. The goal is to have policies that protect municipal drinking water and reflect municipal needs and resources.

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The changes in the protection areas from the current to proposed plan are not substantial, and as a result there are only a limited number of properties where the policies will now apply as a result of the update. As most of the updated protection

areas that extend into Wellington County have a low vulnerability scoring of six or less, policies will not apply to most properties. In Cambridge, the areas close to the new supply wells have a higher vulnerability score and some policies may apply. Some Risk Management Plan policies may apply to properties where high quantities of select hazardous chemicals are stored.

Risk Management Plan policies for the application of road salt will apply to properties in the Pinebush Issue Contributing Area within Waterloo Region. This will include application of salt on roads and medium to large driveways or parking lots.

Policies for the application of road salt and chemical storage in the updated Cambridge East well head protection areas and the Pinebush Issue Contributing area that extend into the Township of Puslinch can be found in the Wellington County chapter of the Grand River Source Protection Plan. A webinar will be held on February 17, 2021 to discuss the updates to the source protection plan affecting the Township of Puslinch.

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In addition to water quality updates, the Region of Waterloo is affected by water quantity updates to the Grand River Source Protection Plan. A Tier 3 Water Budget and Risk Assessment (also called a Tier 3 Study) was completed for the Township of Centre Wellington water supply. The Centre Wellington Tier 3 Study is a technical assessment of the Township's municipal drinking water system's current and future sustainability in light of municipal growth, development, and climate change.

The Township of Centre Wellington Tier 3 Study resulted in the delineation of a Water Quantity Wellhead Protection Area, also referred to as a WHPA-Q. The Tier 3 Study showed that future consumptive groundwater takings and land use changes that limit the ability of water to soak into the ground (called groundwater recharge) could potentially affect the availability of water for the Township's municipal supply. As a result, the WHPA-Q was assigned a significant risk level. This required the development of water quantity policies under the Clean Water Act within the WHPA-Q. The objective of these policies is to improve the sustainability of future supplies and protect municipal drinking water sources from depletion.

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The WHPA-Q encompasses the Centre Wellington municipal wells and many of the non-municipal takings in the area. The WHPA-Q extends toward the west and south, encompassing a small portion of the Township of Woolwich.

As the WHPA-Q was assigned a Significant Risk Level, all existing and future consumptive water takings and future areas of recharge reduction (due to land use development) within this policy area are classified as significant water quantity threats. A consumptive water taking is an activity that takes water from an aquifer or surface

water body without returning the water taken to the same aquifer or surface water body. A recharge reduction threat is an activity that reduces the ability of water to soak into the ground.

Within the Township of Woolwich no existing significant drinking water threat activities were identified inside the WHPA-Q.

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This slide shows a close-up of the WHPA-Q extending into the Township of Woolwich and lists the two prescribed drinking water threats that are identified as a significant threat in this area.

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New water quantity policies were developed to apply to the new water quantity protection areas extending into Waterloo Region from Wellington County. These policies direct different governments to implement the policies in recognition of the existing authorities available to these jurisdictions.

Specifically:

- Directing the Ministry of the Environment, Conservation and Parks to review terms and conditions of existing and adding new conditions to Permits To Take Water to ensure water takings do not negatively impact the sustainability of the Centre Wellington municipal water supply systems.
- Directing the Region of Waterloo and Township of Woolwich to update their Official Plans to include policies and/or studies to protect the sustainability of the water supply systems and ensure approval of watershed studies include a component to assess the sustainability.
- Directing the Region of Waterloo to implement water conservation and optimization education programs developed by Wellington County and collaborate with the Ministry of Environment, Conservation and Parks and Wellington County on local water quantity management.

As with the water quality policies, the water quantity policies were shared between Wellington County and Waterloo Region as part of the policy development process. Details of the proposed new water quantity policies are available on the Grand River Source Protection Plan public consultation webpage.

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This slide shows the timeline and process of this plan update going forward. The updates outlined in this presentation are now in the public consultation phase of the Grand River Source Protection Plan update process. Public consultation began on January 25, 2020 with the posting of the updated Grand River Source Protection Plan

on Lake Erie Region's website at: www.sourcewater.ca/GR-SPP-Update. Public consultation continues into February and ends on March 8, 2021. Any public comments received during this period and potential revisions will be considered by the Lake Erie Region Source Protection Committee on April 1, 2021. The Committee will then release the updated plan to the Grand River Source Protection Authority for submission to the Ministry for review and approval.

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If you have any questions about this plan update and how it may impact you and your property, please contact Eric Thuss, the Region of Waterloo Risk Management Official by email or phone.

Eric Thuss
Risk Management Official
ethuss@regionofwaterloo.ca
519 575 4757 x3658

For any questions about the Source Protection Program in general or about the plan update process, please contact Ilona Feldmann, Lake Erie Region Source Protection Program Assistant by email or phone.

Ilona Feldmann
Lake Erie Region Source Protection Program Assistant
ifeldmann@grandriver.ca
519 261 2763 x2318

Thank you for your interest in drinking water source protection.